

AUSTRALIAN STRESS TESTING

THE PATH TO A MORE ROBUST STRESS TESTING REGIME

AUTHORS

David Howard-Jones, Partner

Ross Eaton, Principal

Edward Emanuel, Principal

James Gordon, Manager



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In the wake of the Global Financial Crisis, regulators have increasingly embraced enterprise-wide stress testing as a means to assess capital adequacy. Used initially to restore confidence in the US banking sector in the depths of the crisis, enterprise-wide stress testing is increasingly considered by regulators worldwide to be complimentary to traditional regulatory and economic capital measures, and in some cases (most notably the US), has become the single most important measure of capital adequacy. However, the regulatory response has been far from uniform across the globe with much of the advancement driven by the US and Europe, which demanded the most urgent actions. In contrast the Asia–Pacific region, and Australia in particular, enjoyed a smoother ride through the crisis, leading to less urgency and a slower ramp up in stress-testing requirements.

Industry-wide stress testing exercises have been completed on a few occasions in Australia, the first being a focused stress test on the housing market in 2002/2003.¹ The most recent industry-wide stress test was completed in 2014, again focusing on scenarios in which there was a severe downturn in the housing market. At the same time, the Australian Prudential Regulation Authority (APRA) has admitted that there is still further work for the industry to do to improve stress testing practices.

As Australian banks continue to take steps towards more robust stress testing practices, there remains an open question: What regulatory stress testing regime is in the best interests of the Australian economy? Stress testing was a major factor in restoring confidence in the US banking sector in 2009 and arguably a more public exercise in Australia would increase confidence in Australian banks in times of stress and have a positive impact on the economy. Yet stress testing comes at a cost. A balance must be found that satisfies the requirements for increased insight into the strength of the banking system, while managing cost and complexity. In the US, the largest banks may spend in excess of \$100MM annually on stress testing and capital planning and submissions may run to over 10,000 pages.

¹ Other stress tests have been: 2005/2006 (The IMF's Financial Sector Assessment Program); 2008 (top down stress-test through the GFC); 2011/2012; and 2014.

In this point of view, we examine several key components of APRA's stress testing regime:

- **Disclosure:** More standardised and thus comparable disclosure is needed around stress testing scenarios and results, which will enable a public debate around the appropriateness of the stress scenarios used, and ensure greater confidence in the banking system in times of crisis
- **Use of supervisory estimates:** banks currently provide both their own estimates and alternative projections with APRA-led estimates – we believe this is an efficient way to ensure a reasonable level of consistency across the industry
- **Frequency:** annual industry-wide stress tests will further the goals of providing confidence in the banking sector and incentivise banks to invest in their stress testing processes
- **Focus of supervisory review:** additional focus on banks' data, methodologies and governance will ensure banks continue to evolve towards global leading practices

Australia can learn from its global peers, who have learnt the difficulties of developing stress testing regimes and approaches under duress in crisis periods – the time to act is now, in a period of relative calm, before the next crisis hits.

The supervisory stress tests developed by the Federal Reserve over the past five years provide a much better risk-sensitive basis [than the IRB approach] for setting minimum capital requirements.

Daniel Tarullo,
Member of the Board of
Governors of the Federal
Reserve System, 2014

1. THE EVOLVING SUPERVISORY LANDSCAPE

The US stress testing regime for large banks, known as the Comprehensive Capital Analysis and Review (CCAR), has evolved from a post-crisis response to shore up confidence in the banking sector to an ongoing supervisory framework. Rather than being a simple capital adequacy “pass/fail” exercise, it is a holistic view of a bank's risk identification, measurement, reporting and management capabilities, with banks increasingly “failing” for qualitative, rather than quantitative, reasons. In the 2013, 2014 and 2015 CCAR exercises, eight out of nine banks that “failed” CCAR (i.e. the Federal Reserve objected to their capital plans, meaning they could not increase distributions to shareholders) did so because of qualitative requirements, rather than because they were deemed to have insufficient capital.² Reasons for qualitative failure commonly cite governance and oversight, internal controls, risk identification, and the quality of banks' loss and revenue estimation models.

Today, stress testing is seen as the primary tool for capital adequacy assessment by the Federal Reserve. It is also increasingly important in Europe, with the 2014 European Banking Authority (EBA) EU-wide stress test conducted across approximately 130 EU banks. In addition, the Bank of England continues to evolve its own stress testing regime for UK banks.

2 In CCAR 2013, Ally Financial Inc failed for both quantitative and qualitative reasons. In CCAR 2014, Zions Bancorporation had insufficient capital based on the Federal Reserve's projections. Santander Holdings USA's capital plan was rejected in both 2014 and 2015 and is counted here twice.

Whilst there is agreement amongst supervisors that stress-testing is a crucial capital adequacy tool, the level of focus, detail and supervision of the stress tests differ significantly across jurisdictions. Australia has the opportunity to learn from the experience in these other jurisdictions, and to put in place a stress testing regime which both ensures banks are adequately capitalised and increases market confidence in the banking industry without putting an undue burden on banks' resources – a cost that is ultimately borne by banks' shareholders, employees and customers.

2. THE FUTURE OF AUSTRALIAN STRESS TESTING

At the time of writing, despite discussion of a growing housing bubble and associated risks, the Australian financial services industry continues to enjoy a period of relative calm. Australia is therefore well placed to articulate the target state for supervisory enterprise-wide stress testing without the urgent pressures imposed by an immediate need to restore market confidence.

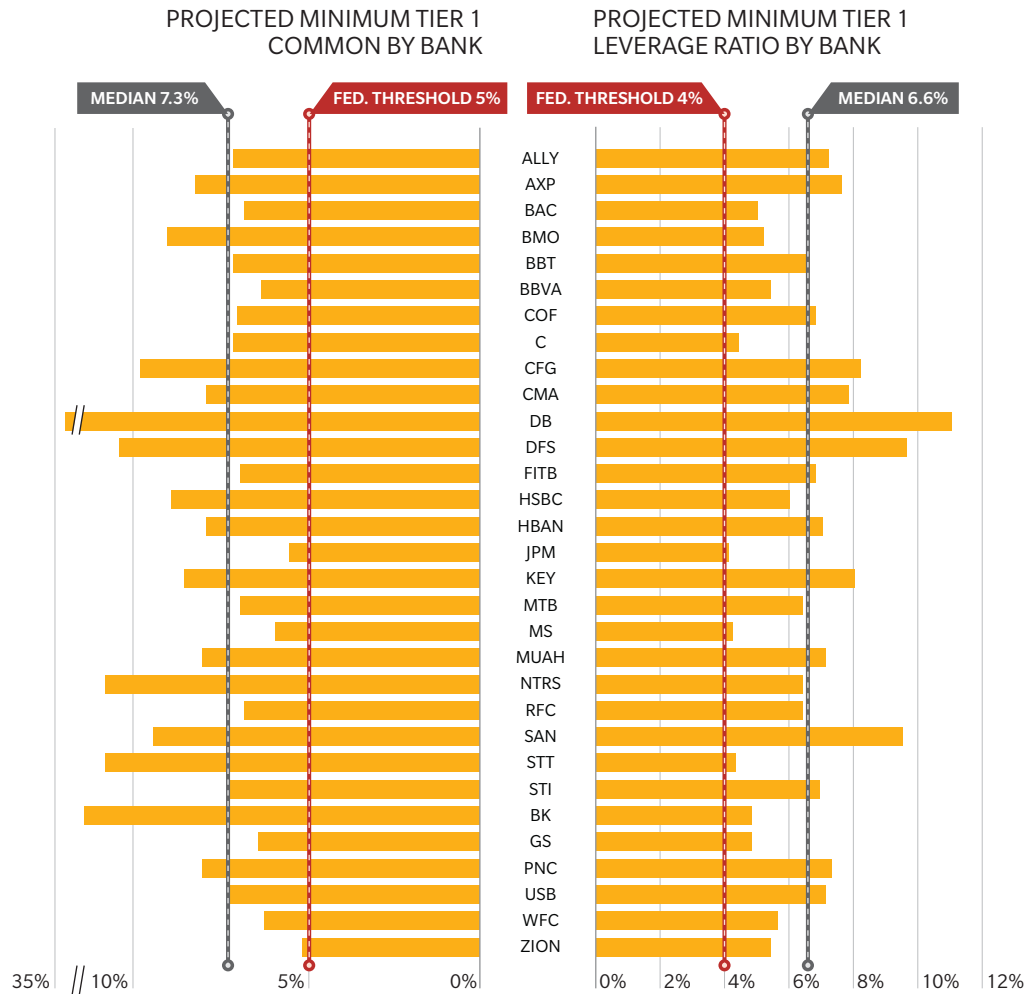
We believe four major important design questions need to be addressed:

- A. Disclosure:** disclosure of scenarios, methodology and results
- B. Use of supervisory estimates:** the development of loss, revenue and capital forecasts by APRA
- C. Frequency** of APRA's industry-wide stress tests
- D. Focus of supervisory review:** extent of focus on methodology, processes, controls and governance

A. DISCLOSURE

Disclosure spans the full set of information needed for the market to assess the appropriateness of financial institutions' capital levels: stress test scenarios, supervisory instructions, including any supervisor-specified parameters, and the results of the stress tests. Appropriate disclosure is an important part of the bridge between banks' (or their supervisors') estimates of resilience to a crisis and investor understanding and confidence. Disclosure can also focus Board and management attention on the data, process and assumptions driving the stress test estimates and the results themselves, leading to more thoughtful and rigorous processes.

Exhibit 1: CCAR 2015: projected Tier 1 Common and Tier 1 Leverage ratios by bank



Source: Federal Reserve

Note: GS, JPM, MS, and SHUSA numbers reflect revised capital actions

Disclosure requirements of stress testing vary substantially between Australia, the US, and Europe. In Australia, the APRA stress tests are a largely private exercise between APRA and banks, though there has been some disclosure of scenarios and aggregate results.³ In the US and Europe, however, there is significantly more disclosure around the scenarios, assumptions and results at the bank-level (see Exhibit 1 for an example of US CCAR results). This high level of transparency has its origins in the Global Financial Crisis and subsequent periods of stress in Europe, when institution-level transparency has been seen as critical to shore up confidence in fragile banking sectors. There are arguments for and against bank-level disclosure. Bank-level disclosures have proved to be invaluable for shoring up confidence in the system in times of crisis. However, whilst valuable in times of crisis, bank-level disclosures have the potential to be counterproductive in benign times if undue management attention is diverted towards managing public relations issues associated with

³ Wayne Byres speech, Seeking strength in adversity: Lessons from APRA's 2014 stress test on Australia's largest banks, 7 November 2014.

the disclosure. APRA has stated that it does not disclose bank-level results partly because it wishes to avoid creating undue focus on stress tests, particularly since the scenarios can change.⁴ However, the overseas experience suggests that, regardless of debate around the plausibility of the scenarios, additional transparency is appreciated by the market. We believe that bank-level disclosure is highly beneficial and may become necessary when Australia enters a period of stress.

In addition to the results, we see great benefit in full disclosure of the macroeconomic scenarios, as occurs in the US and the EU, and instructions/assumptions required to run the stress test. A detailed understanding of scenario parameters helps the market better interpret the outcomes, providing assurance that key vulnerabilities were indeed tested and accounted for in the results, and enables a robust debate around the plausibility of the specified macro-economic conditions.

B. USE OF SUPERVISORY ESTIMATES

Another major difference between stress testing regimes is the extent of supervisor estimates in determining banks' capital adequacy. Broadly, there are three approaches:

- **Supervisor-led projections.** In the US, the Federal Reserve produces its own estimates of banks' capital positions under each supervisory scenario as part of CCAR. This was seen during the Global Financial Crisis as a critical way to improve confidence in the estimates, since markets had begun to lose faith in banks' ability to estimate their own risks, and the Federal Reserve continues to use its own estimates as the key determinant of banks' capital adequacy (note: banks must also produce their own estimates, though these are really part of the "qualitative" test described above). More recently, the Bank of England has joined the Federal Reserve in developing capabilities to produce its own estimates to compare against banks' estimates.
- **Bank-led projections with regulatory assumptions.** APRA's "phase 2" stress testing approach utilises this approach, with APRA defining assumptions around the balance sheet, RWAs, credit losses, net interest margins and market shocks. The EU-wide stress test also utilised a similar approach, specifying or constraining many of the assumptions. This ensures a level of consistency between banks, while minimising supervisory resources by ensuring banks produce the projections. Necessarily, this places a large amount of trust in the banks' processes.
- **Bank-led projections.** Traditionally, though their ICAAP exercises, banks developed their own models and assumptions, and in many jurisdictions (including the US and Australia, though APRA's "phase 1" stress testing approach) bank-led estimates complement the other methods above. However, regulators have become increasingly sceptical about banks' own estimates, and therefore this method is unlikely to be used in isolation.

We believe that some use of supervisory estimates is necessary to ensure the market has confidence in the conclusions drawn around banks' capital adequacy. Market confidence is likely to be increased when the regulator fully owns the projections, though this also adds to the cost of stress testing – namely, regulatory resources, and bank resources required to submit large volumes of data on a regular basis. (This also puts a lot of faith in the supervisor's own projections.) Provided banks put in place reasonable controls around the

⁴ Wayne Byres speech, Seeking strength in adversity: Lessons from APRA's 2014 stress test on Australia's largest banks, 7 November 2014.

production of their stress test projections, bank-led projections with regulatory assumptions represent an efficient means of achieving a reasonable degree of consistency across banks and, in doing so, creating market confidence in the estimate. In this sense, APRA's "phase 2" approach (or a similar approach) is a reasonable end game, although APRA may ultimately decide to take a more direct role in modelling at some point in future.

C. FREQUENCY

Though Australian banks must complete stress testing as part of their annual ICAAP exercises, APRA's industry-wide stress test only takes place every 2–3 years. This is aligned with the EU-wide stress test, which took place in 2014 and will be repeated in 2016. However, led by the US, regulators in several jurisdictions (including the UK, Canada and Singapore), have moved to an annual cycle of industry-wide stress tests. As noted above, stress testing is increasingly being seen as a key measure of banks' capital adequacy. In order for investors and counterparties to better assess Australian banks' capital adequacy, annual industry-wide stress tests would be beneficial, particularly as market conditions begin to deteriorate. Additionally, more frequent processes are likely to encourage banks to invest more heavily in their stress testing processes and to put in place more robust infrastructure, which ultimately add to the robustness of the output.

D. FOCUS OF SUPERVISORY REVIEW

One notable difference between the US stress testing regime and many others is the extent of focus on the "qualitative review" – i.e. the Federal Reserve's review of the banks' stress testing and capital planning processes, methodologies, controls and governance. As noted above, most US banks in recent years have "failed" the CCAR stress tests because of the qualitative review, not because they had a shortage of capital. Cited reasons for failure include issues associated with risk identification and internal scenario development processes, revenue and loss models, assumptions and supporting analysis, management information systems, governance and internal controls⁵ – across the entire range of the Federal Reserve's Seven Principles of an Effective Capital Adequacy Process.

⁵ Source: Federal Reserve.

Exhibit 2: Federal Reserve’s Principles of an Effective Capital Adequacy Process (CAP)

Principle 1: Sound foundational risk management	The [BANK] has a sound risk-measurement and risk-management infrastructure that supports the identification, measurement, assessment, and control of all material risks arising from its exposures and business activities.
Principle 2: Effective loss-estimation methodologies	The [BANK] has effective processes for translating risk measures into estimates of potential losses over a range of stressful scenarios and environments and for aggregating those estimated losses across the [BANK].
Principle 3: Solid resource-estimation methodologies	The [BANK] has a clear definition of available capital resources and an effective process for estimating available capital resources (including any projected revenues) over the same range of stressful scenarios and environments used for estimating losses.
Principle 4: Sufficient capital adequacy impact assessment	The [BANK] has processes for bringing together estimates of losses and capital resources to assess the combined impact on capital adequacy in relation to the [BANK]’s stated goals for the level and composition of capital.
Principle 5: Comprehensive capital policy and capital planning	The [BANK] has a comprehensive capital policy and robust capital planning practices for establishing capital goals, determining appropriate capital levels and composition of capital, making decisions about capital actions, and maintaining capital contingency plans.
Principle 6: Robust internal controls	The [BANK] has robust internal controls governing capital adequacy process components, including policies and procedures; change control; model validation and independent review; comprehensive documentation; and review by internal audit.
Principle 7: Effective governance	The [BANK] has effective board and senior management oversight of the CAP, including periodic review of the [BANK]’s risk infrastructure and loss- and resource-estimation methodologies; evaluation of capital goals; assessment of the appropriateness of stressful scenarios considered; regular review of any limitations and uncertainties in all aspects of the CAP; and approval of capital decisions.

Sources: Federal Reserve, Comprehensive Capital Analysis and Review 2015 - Summary Instructions and Guidance, October 2014

While these qualitative requirements in the US have resulted in a workload that some banks may consider excessive (e.g. several thousand page capital plan submissions), we believe there are several areas where Australian stress testing needs to improve, and become more aligned with practices in the US. Specifically, we believe various improvements are needed around banks' data quality; loss and revenue model methodologies; and governance around their stress testing processes, with more senior oversight of the process and involvement in key decision-making. Australian banks have a lot of room for improvement, and APRA should ensure the banks continue to evolve their stress testing practices in the direction of leading global practices.

3. CONCLUSION

In the US and Europe, stress testing has served a critical role in restoring market confidence. Transparency has been a critical component of this. Due to its success, stress testing has since become a vital supervisory tool, and in the US, the primary measure of banks' capital adequacy. APRA's stress testing requirements have trended in the direction of the US and European requirements, yet a substantive gap still remains on some crucial areas, and the end point remains uncertain. We think there is merit in defining this end point in times of relative economic calm, rather than under duress in the midst of a crisis. Conducted appropriately, a more public, annual stress testing regime will help shore up market confidence in the banking industry in future crises, and curb excesses during benign times. It can serve, along with other means, to ensure that risks faced by the Australian financial services industry are better understood by investors. Enhanced disclosure will bring to light important debate about the appropriateness and severity of scenarios, as well as the capital position of the sector in those situations. Upgrades to banks' processes will result in further improvements in market confidence in times of stress and provide a more useful toolkit for banks to manage their risks and capital levels. Though this necessarily entails significant investment, a more transparent, frequent and robust stress testing regime will help Australia's financial services prove more resilient in the next crisis.

Exhibit 3: Regulatory stress tests – Australia vs. the US and EU

	AUSTRALIA ADI Industry-wide stress tests	US CCAR ^{*1}	EUROPE EBA EU-wide stress test
Frequency Industry-wide & internally run stress tests	<ul style="list-style-type: none"> Typically every 2–3 years Common scenario for industry in annual ICAAP 	<ul style="list-style-type: none"> Annual exercise Additional mid-year “light” process, involving just quantitative projections 	<ul style="list-style-type: none"> Typically every 2 years ICAAP required annually
Banks covered Number of banks in the economy required to complete the stress tests	<ul style="list-style-type: none"> 2014 stress test included largest 13 banks, covering 90% of total industry assets 	<ul style="list-style-type: none"> Top 33 bank holding companies with > \$50 BN in assets (Less onerous annual process for banks with \$10–50BN in assets) 	<ul style="list-style-type: none"> 2014 stress tests covered ~130 banks, either with > €30 BN in assets or top 3 in local market 2016 exercise will cover 51 banks, covering 70% of the banking sector in the EU
Scenarios Number of scenarios required to run, and the need to design internal scenarios, if applicable	<ul style="list-style-type: none"> Base and two stress scenarios provided by APRA^{*2} Scenarios include the NZ economy Note: additional internal scenarios defined for ICAAP 	<ul style="list-style-type: none"> Base, adverse and severely adverse scenarios provided by Federal Reserve Additionally, banks must supply their own base and severe scenarios 	<ul style="list-style-type: none"> Base and stress scenarios provided by EBA Note: additional internal scenarios defined for ICAAP
Documentation required Level of detail required in modelling, balance sheet, growth assumptions and the level of model risk review requirements.	<ul style="list-style-type: none"> High-level results summaries 	<ul style="list-style-type: none"> Highly detailed quantitative submission Capital plan and additional documentation runs to >5,000 pages 	<ul style="list-style-type: none"> Relatively short qualitative document detailing modelling methods Written responses to regulatory questions/ concerns
Governance/oversight requirements Level in the organisation required to sign off the stress test results	<ul style="list-style-type: none"> CRO sign-off required 	<ul style="list-style-type: none"> Board sign-off required Very high levels of senior management/ Board attention required 	<ul style="list-style-type: none"> Senior management and governing body accountable for programme implementation, management and oversight
Supervisory review Focus of supervisors’ reviews	<ul style="list-style-type: none"> Primarily a capital adequacy assessment, with a review of banks’ models and assumptions 	<ul style="list-style-type: none"> Covers risk management framework, risk identification process, banks’ scenario design process, data, models, governance and controls 	<ul style="list-style-type: none"> Focus on output more so than the modelling process 2014 exercise began with a detailed supervisor-led review of starting balance sheets (AQR)

*1 Our focus is on large banks (>\$50BN) for this discussion, however the US program is much broader; The Dodd Frank Act mandates stress testing for all banks >\$10bn at least once a year, and twice per year for banks above >\$50bn

*2 For the 2014 exercise. A base scenario and one scenario provided in the 2011/2012 exercise.

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For more information please contact the marketing department by email at info-FS@oliverwyman.com or by phone at one of the following locations:

ASIA PACIFIC
+65 65 10 9700

EMEA
+44 20 7333 8333

AMERICAS
+1 212 541 8100

www.oliverwyman.com

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